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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,103	10/28/2003	Huey-Chiang Liou	ITL.1054US (P17790)	4735
21906	7590	08/20/2004	EXAMINER	
TROP PRUNER & HU, PC 8554 KATY FREEWAY SUITE 100 HOUSTON, TX 77024			DANG, TRUNG Q	
			ART UNIT	PAPER NUMBER
			2823	

DATE MAILED: 08/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/695,103

Applicant(s)

LIU ET AL.

Examiner

Trung Dang

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Trefonas, III (U.S. Pat. 6,280,911) in view of Morita et al. (U.S. Pat. 5,185,296).

For method claims 7-12, Trefonas teaches a method comprising: forming a chemically amplified photoresist over a semiconductor substrate by blending at least one non-ionic photoacid generator (PGA) in photoresist compositions (col. 1, lines 59-63; col. 14, lines 1-3). Note that, a photoresist when incorporated a PGA is called a chemically amplified photoresist.

Trefonas differs from the claims in not specifically discloses that the chemically amplified photoresist is coated over the semiconductor substrate by Langmuir-Blodgett (LB) method even though Trefonas suggests that the photoresist may be applied by any standard means including dipping or spinning (col.14, lines 9-11).

Morita et al. teach a method in which a photoresist layer is coated on a semiconductor substrate by known techniques including spin coating and LB method (col. 5, lines 50-55).

The subject matter as a whole would have been obvious to one of ordinary skill in the art to coat the photoresist of Trefonas by LB method because the substitution of art recognized equivalents as taught by Morita et al. would have been within the level of one skilled in the art. Furthermore, it is known in the art that a photoresist layer coated by LB method would have the benefit of producing a fine pattern because of the order orientation of molecules of the LB film. Note that LB method involves dipping process to form a film on a substrate.

For claim 9, see Trefonas reference, col. 4, line 55 for the chemical formula of the non-ionic PAG where XaR is  $-\text{CF}_3$  (col.4, line 63,  $n=1$ ) and X, Y form a fused aromatic ring (col. 5, line 3).

For claim 10, see Trefonas reference, col. 4, line 30 for the chemical formula of the non-ionic PAG.

For claims 11-12, see Trefonas' abstract.

With respect to product claims 1-6 and 13-15, the structure as claimed is obtained by the combined process as noted above.

For claim 13, it is noted that PAG contained in the exposed portion of the resist generates an acid (hydrogen ion) that functions as a catalyst at the time of baking to start a cross linking reaction (in the case of a negative photoresist) or to

reduce the dissolution inhibiting effect (in the case of a positive photoresist), hence the polymer in Trefonas' photoresist is an acid sensitive polymer because the acid causes chemical reactions in the polymer as explained above.

3. Applicants are requested to provide references cited in pages 7 and 8 of the present specification because these references are non-patent literatures that are not readily obtainable by the Examiner.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trung Dang whose telephone number is 571-272-1857. The examiner can normally be reached on Mon-Friday 9:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 571-272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>.

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Should you have questions on access to the Private PAIR system, contact the  
Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Trung Dang  
Primary Examiner  
Art Unit 2823

August 09, 2004

A handwritten signature in black ink, appearing to read 'Trung Dang', written in a cursive style.